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Heavy quark potential at non-zero temperature and quarkonium spectral functions PETER PETRECZKY, BNL — I calculate different types of Wilson loops of temporal size t < 1/T at non-zero temperatures on the lattice using Highly Improved Staggered Quark (HISQ) action and temporal extent Nt=8 and 12. Unlike other static correlators which go around the periodic boundary these Wilson loops are not related to the free energy of static quark anti-quark pair. Therefore from the analysis of the Wilson loop I extract the real part of the heavy quark potential. I find that the extracted potential is systematically larger than the singlet free energy calculated on the lattice. At T > 200MeV we supplement the calculated real part of the potential with the imaginary part obtained in perturbation theory and evaluate the quarkonium spectral functions. I find that all quarkonium states except the Upsilon(1S) melt at temperatures T > 300MeV.

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